The Bay Delta Conservation Plan

By Stephanie Skophammer (Environmental Review Section) & Erin Foresman (Watersheds Office)

April 16, 2014

Outline

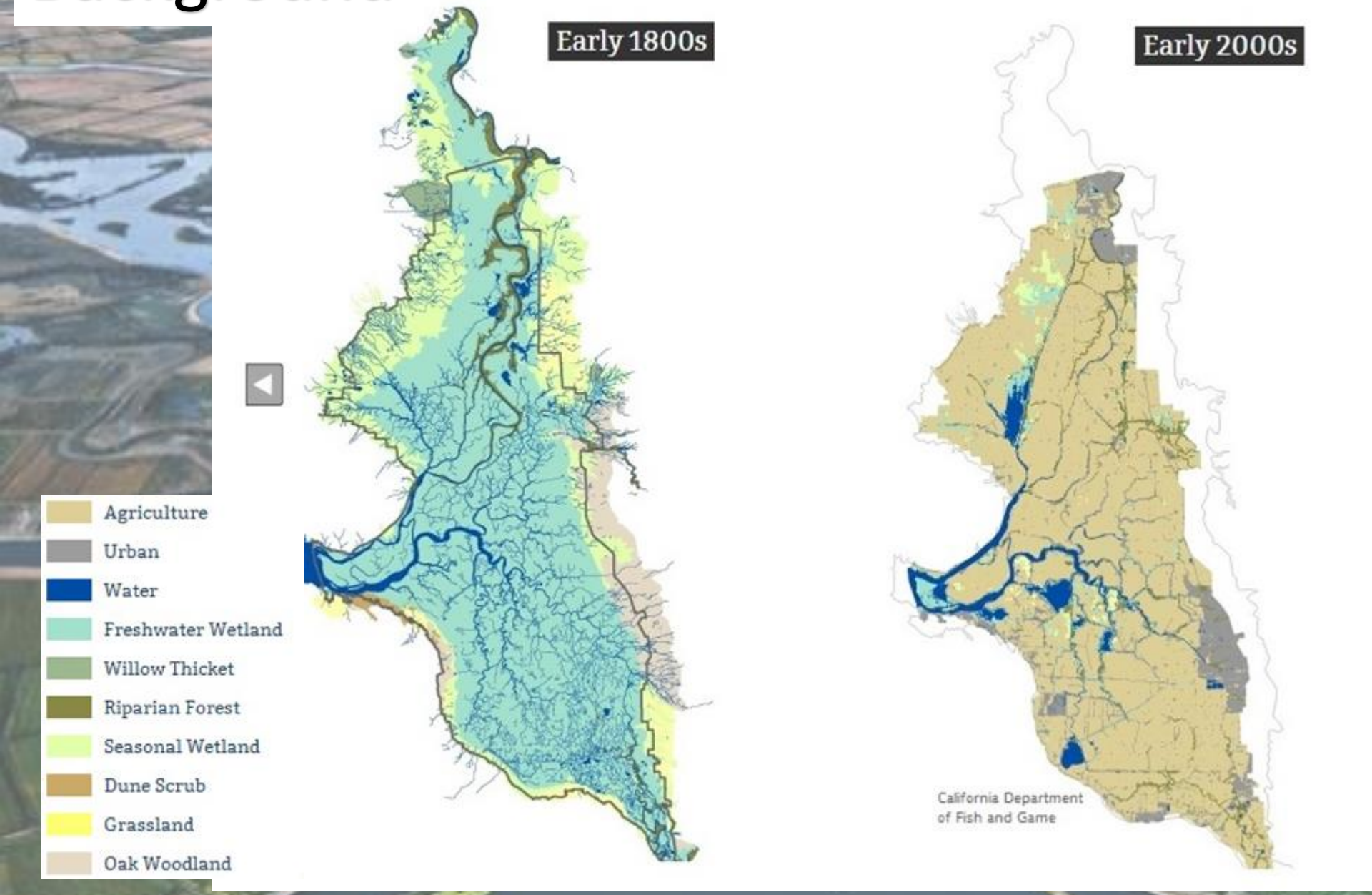
- Background
- BDCP Purpose
- Roles
- BDCP Elements
- Analysis and impacts
- Next steps for EPA
- Resources

Background


100 KM 100 Miles


NORTH DELTA
CENTRAL DELTA
SOUTH DELTA
Map: Early 1800s Delta habitats, produced by SFEI-ASC (show legend)

Background



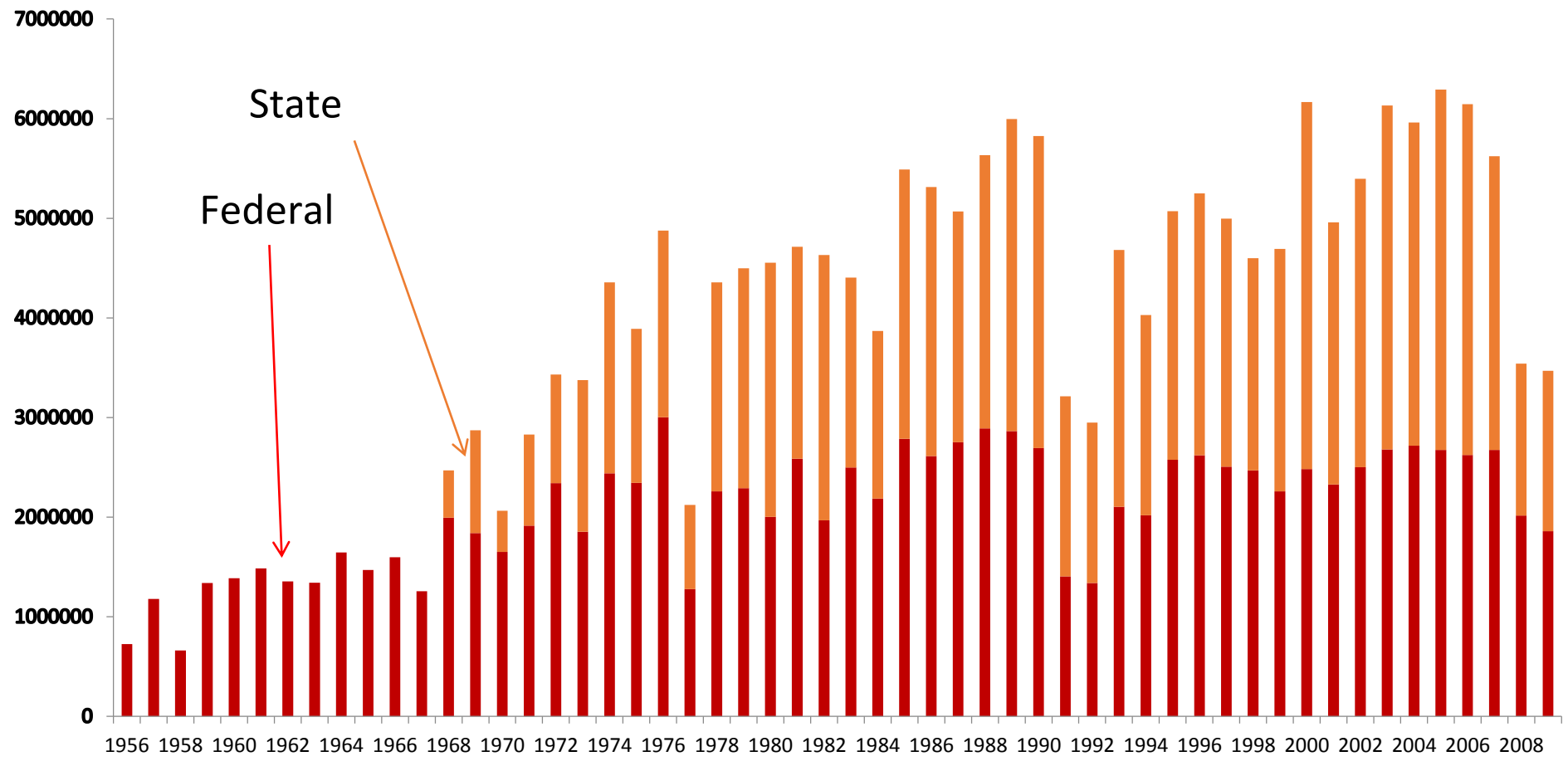
Credit: http://science.kqed.org/quest/delta-map/

Background


Shasta Lake
Red Bluff Diversion Dam
Lake Oroville
Sacramento River
Folsom Lake
Sierra Nevada Range
Delta Pumps
Mokelumne Aqueduct
Contra Costa Canal
New Melones Lake
Los Vaqueros Reservoir
Hetch Hetchy Aqueduct
San Joaquin River
Millerton Lake
San Luis Reservoir
Delta-Mendota Canal
San Luis Canal
Los Angeles Aqueduct
California Aqueduct
Bay-Delta Watershed
Delta
Tulare Sub-Basin
This basin flows into the San Joaquin River only in wet years.
Engineering Projects
Federal
State
State & Federal
Local
Colorado River Aqueduct
Coachella Canal
San Diego Aqueducts
All American Canal

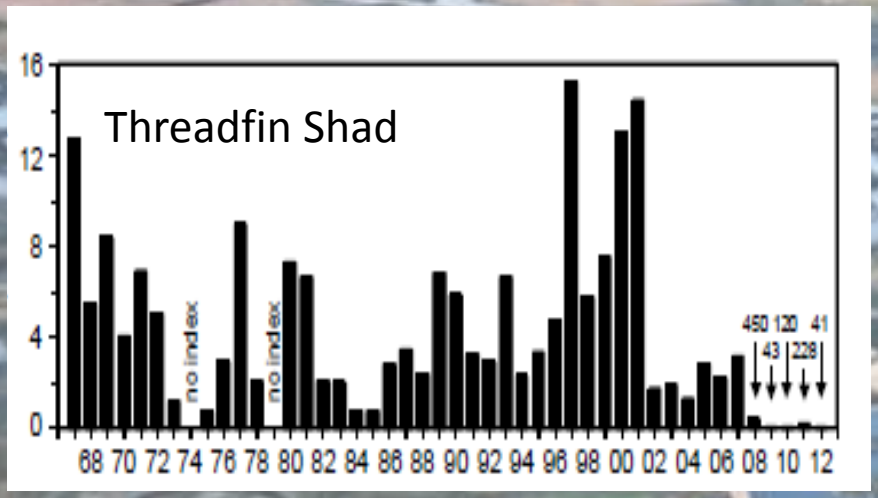
Background

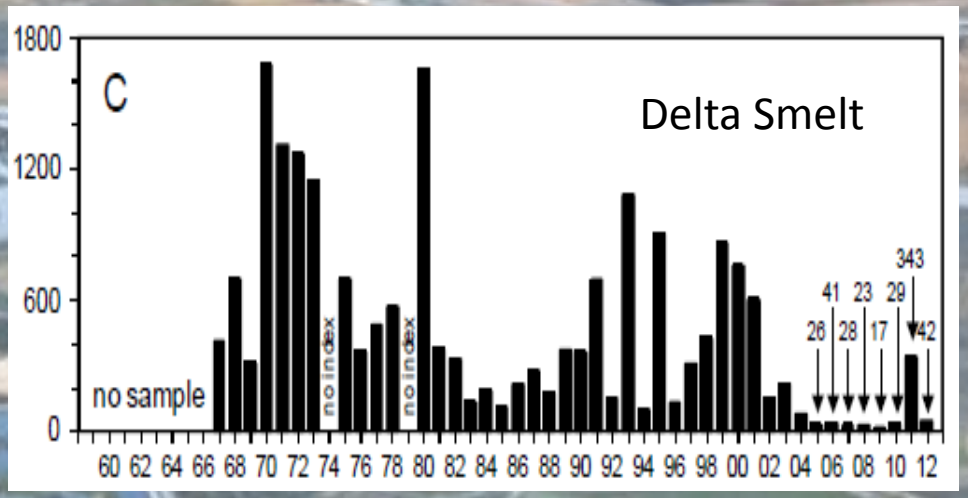
Exports in acre-feet

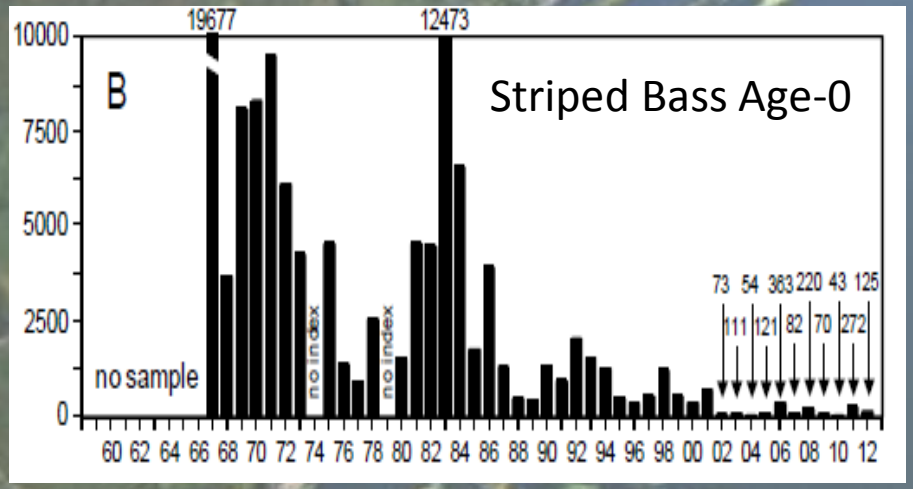


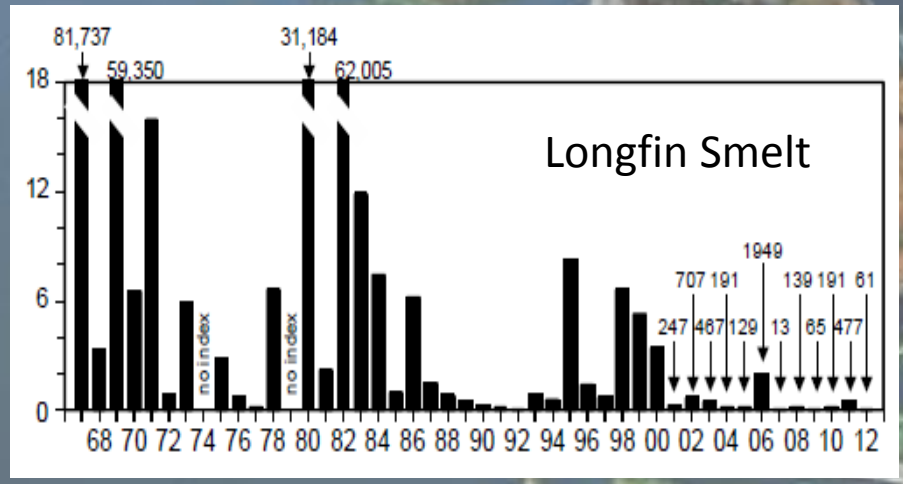
-6 million acre feet = 2 trillion gallons

Background – Ecosystem Collapse

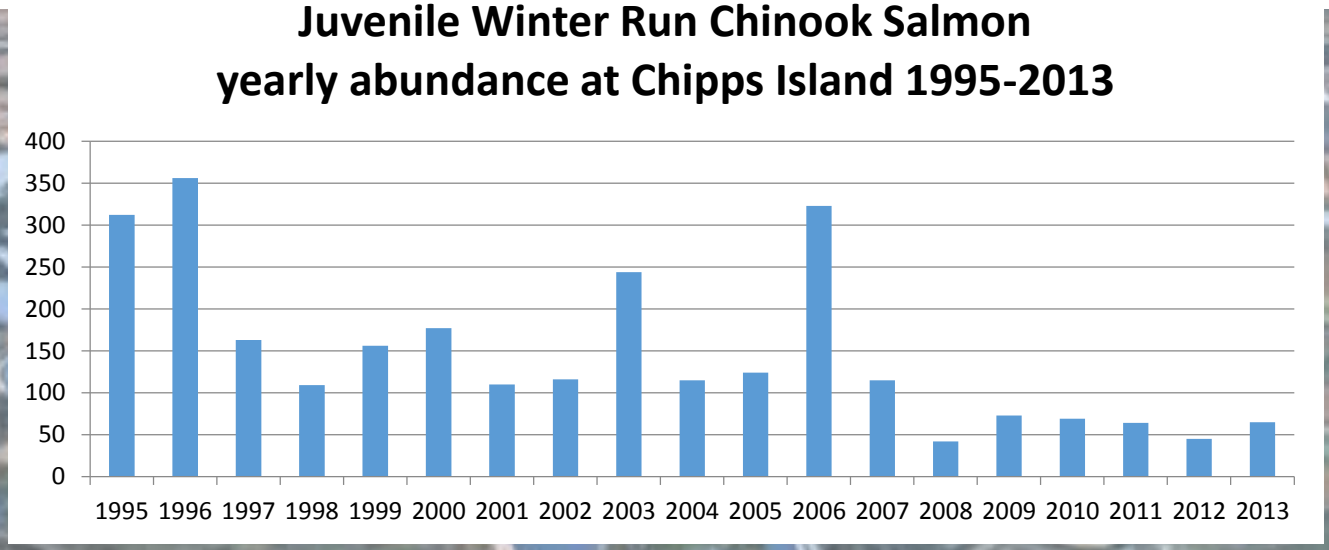


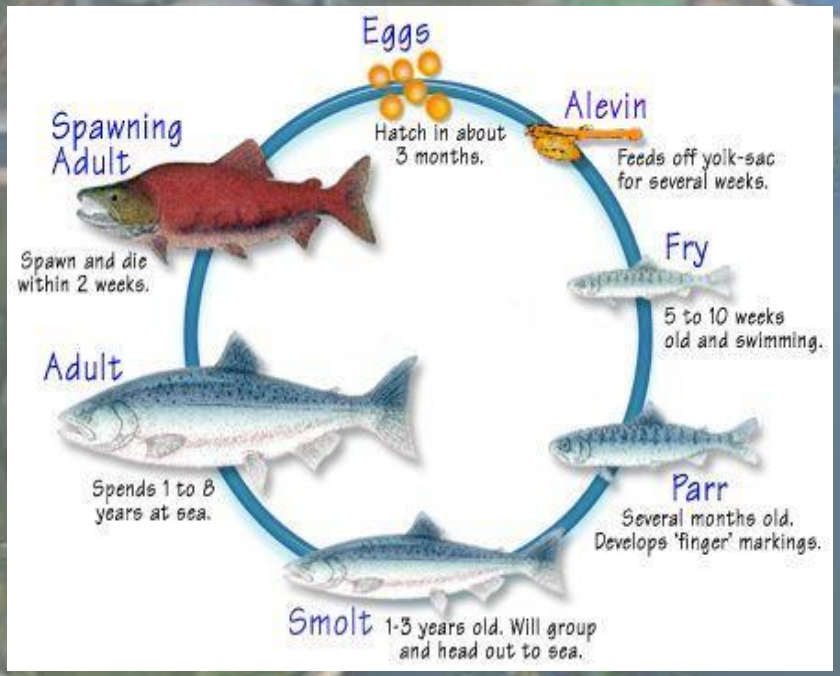


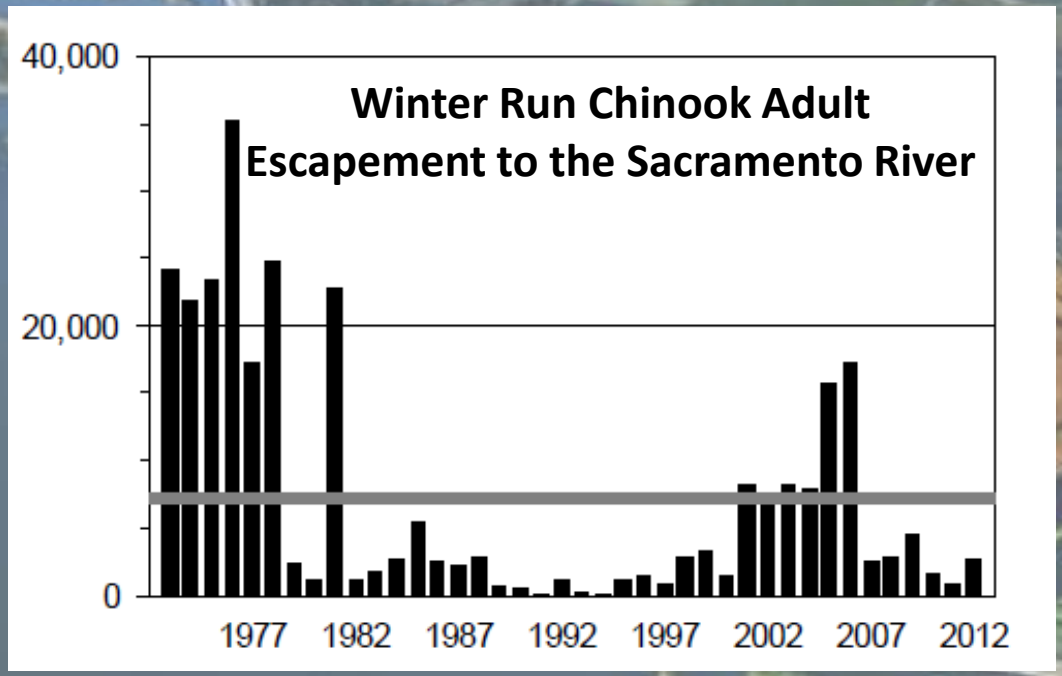




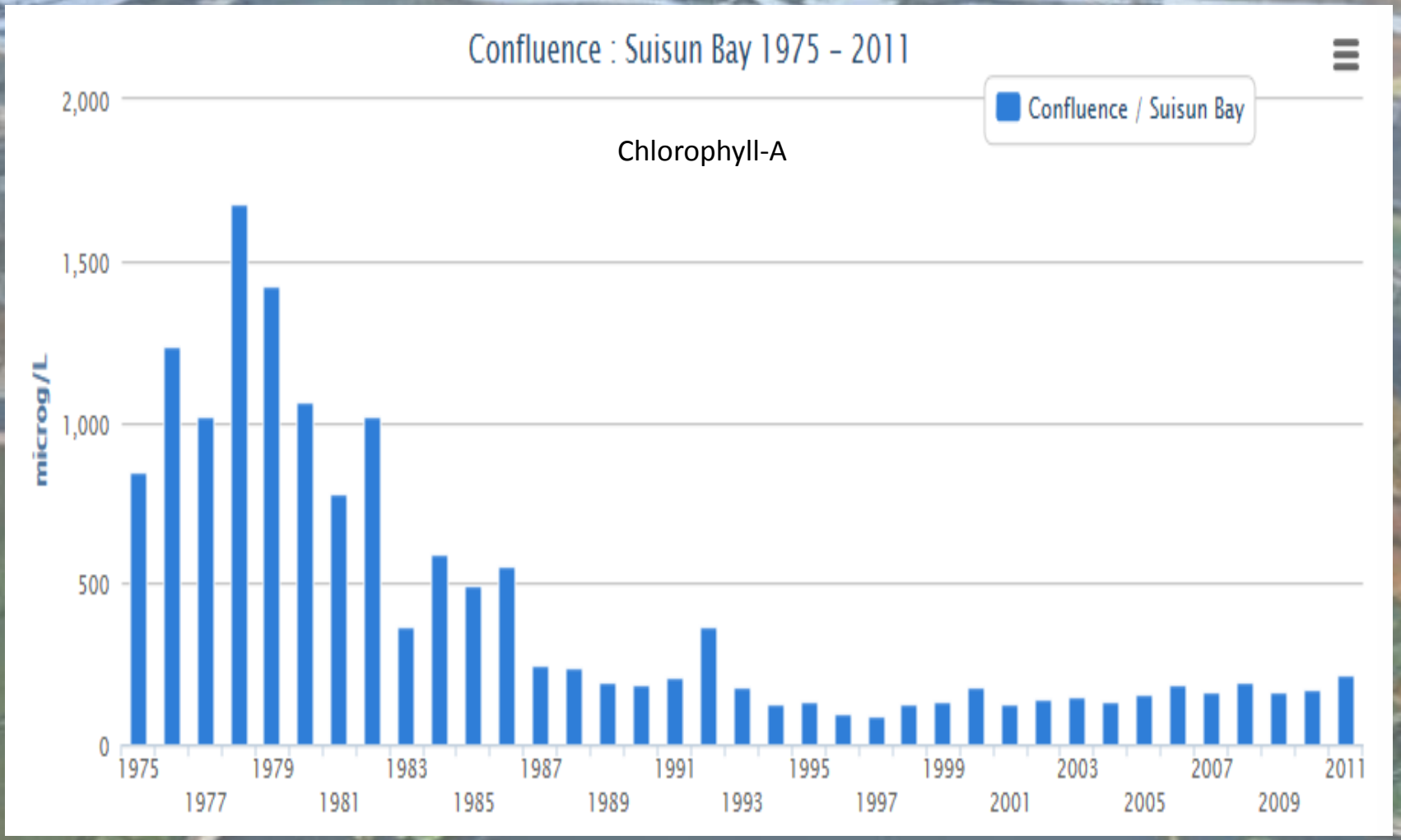
Background – Ecosystem Collapse



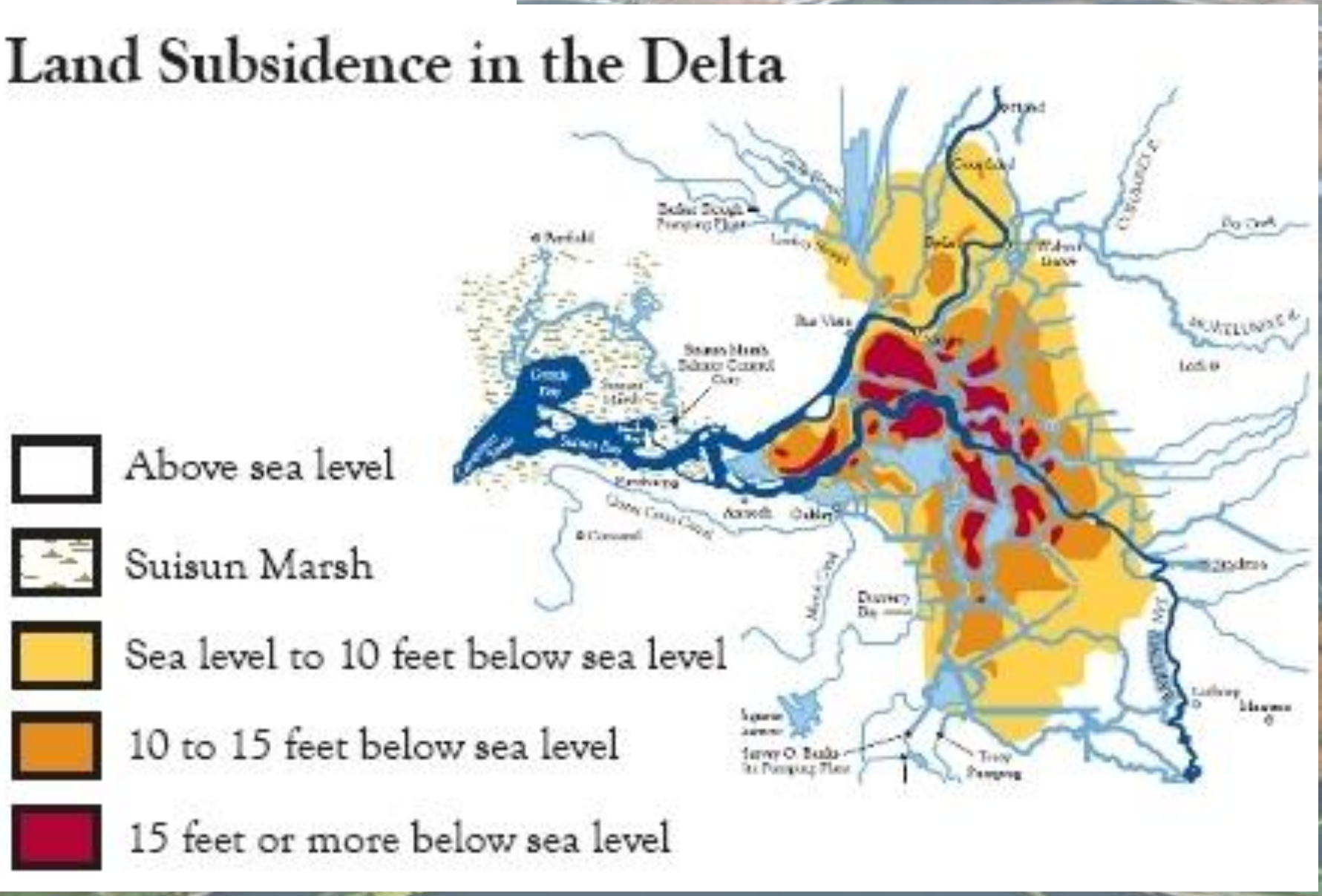




Background Ecosystem Collapse



Background


Land Subsidence in the Delta
Above sea level
Suisun Marsh
Sea level to 10 feet below sea level
10 to 15 feet below sea level
15 feet or more below sea level

BDCP & Purpose

The BDCP is an application for a 50-year “take” permit under the Endangered Species Act to modify and continue operating the CVP and SWP.

Intended to improve the ecosystem of the delta and improve water supply reliability by constructing twin tunnels for water conveyance for the delta

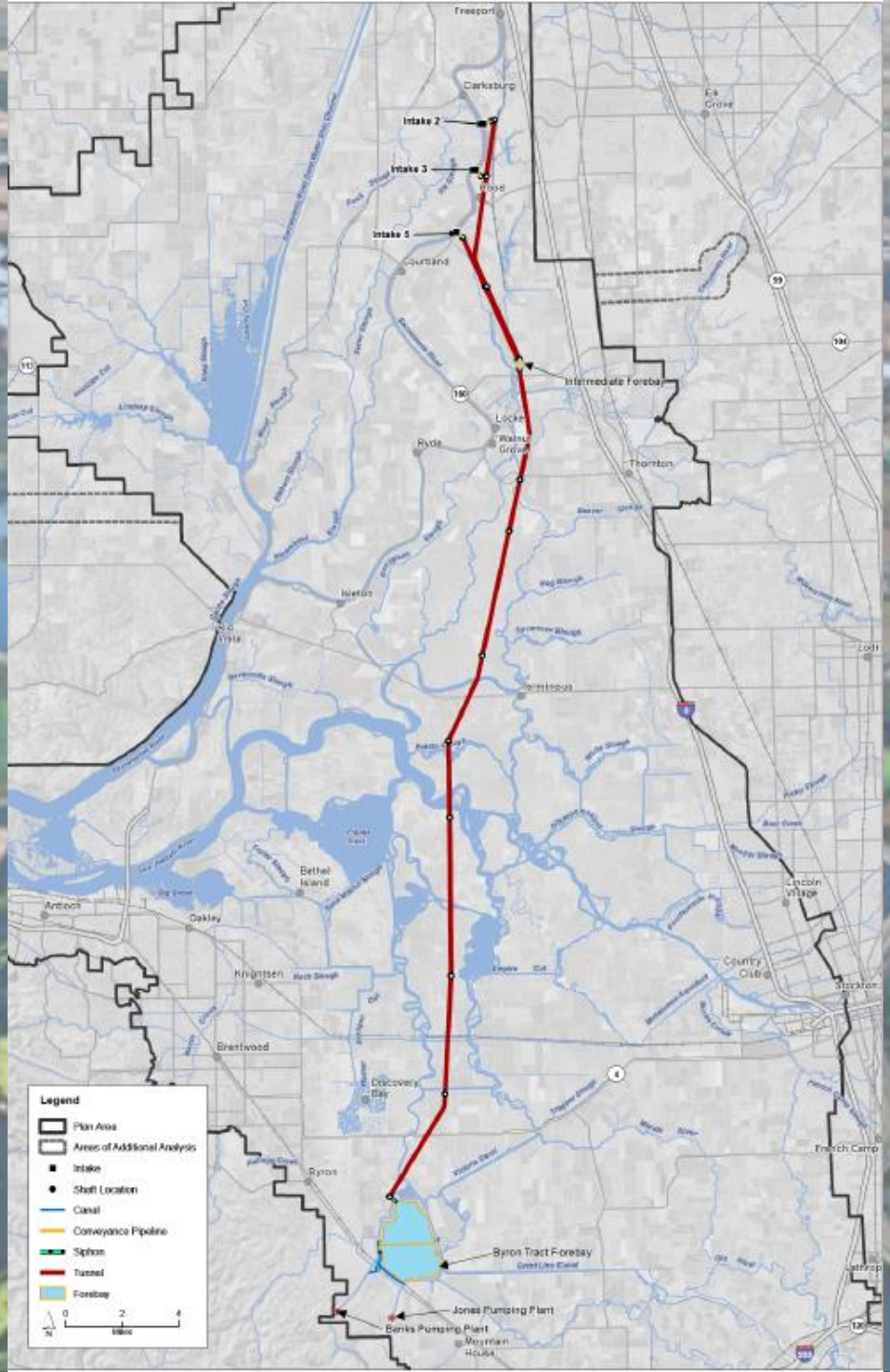
Roles

- Federal Role:
  - The Fish and Wildlife Service
  - National Marine Fisheries Service
  - Bureau of Reclamation
  - EPA Role: NEPA Review, CWA Oversight
- State Role:
  - Department of Water Resources
  - Department of Fish and Wildlife
- Beneficiaries: Alameda County Flood Control Zone 7; Santa Clara Water District, Kern County Water Agency, Metropolitan Water District of Southern CA, San Luis Delta Mendota Water Authority and Westlands Water District

BDCP Elements

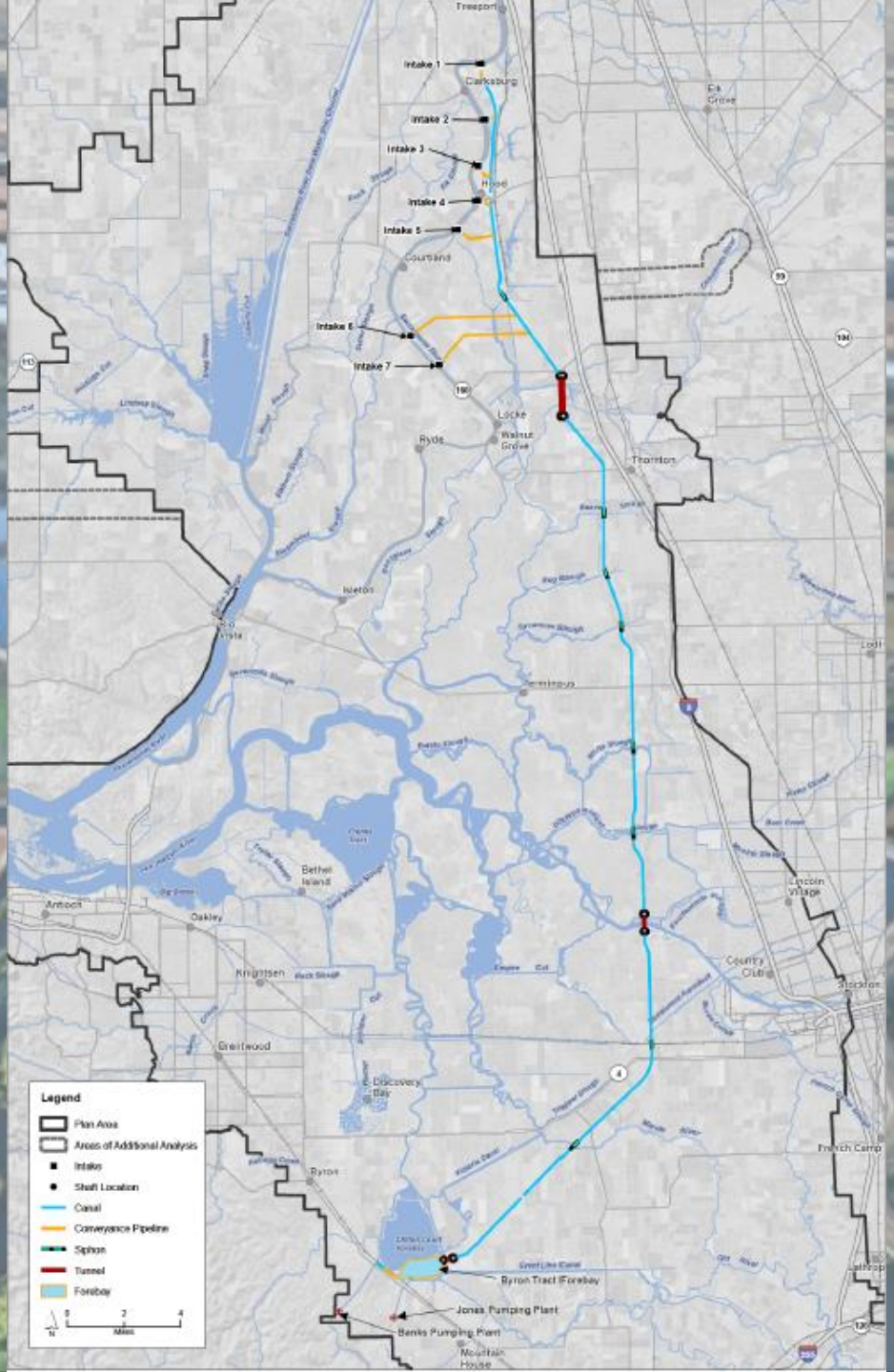
- Conservation Measure 1- two tunnels
- Conservation Measures 2- Yolo bypass
- Conservation Measures 4- tidal restoration
- Conservation Measure 3,5-11- other restoration
- Conservation Measures 12-22- stressor reduction

BDCP Elements

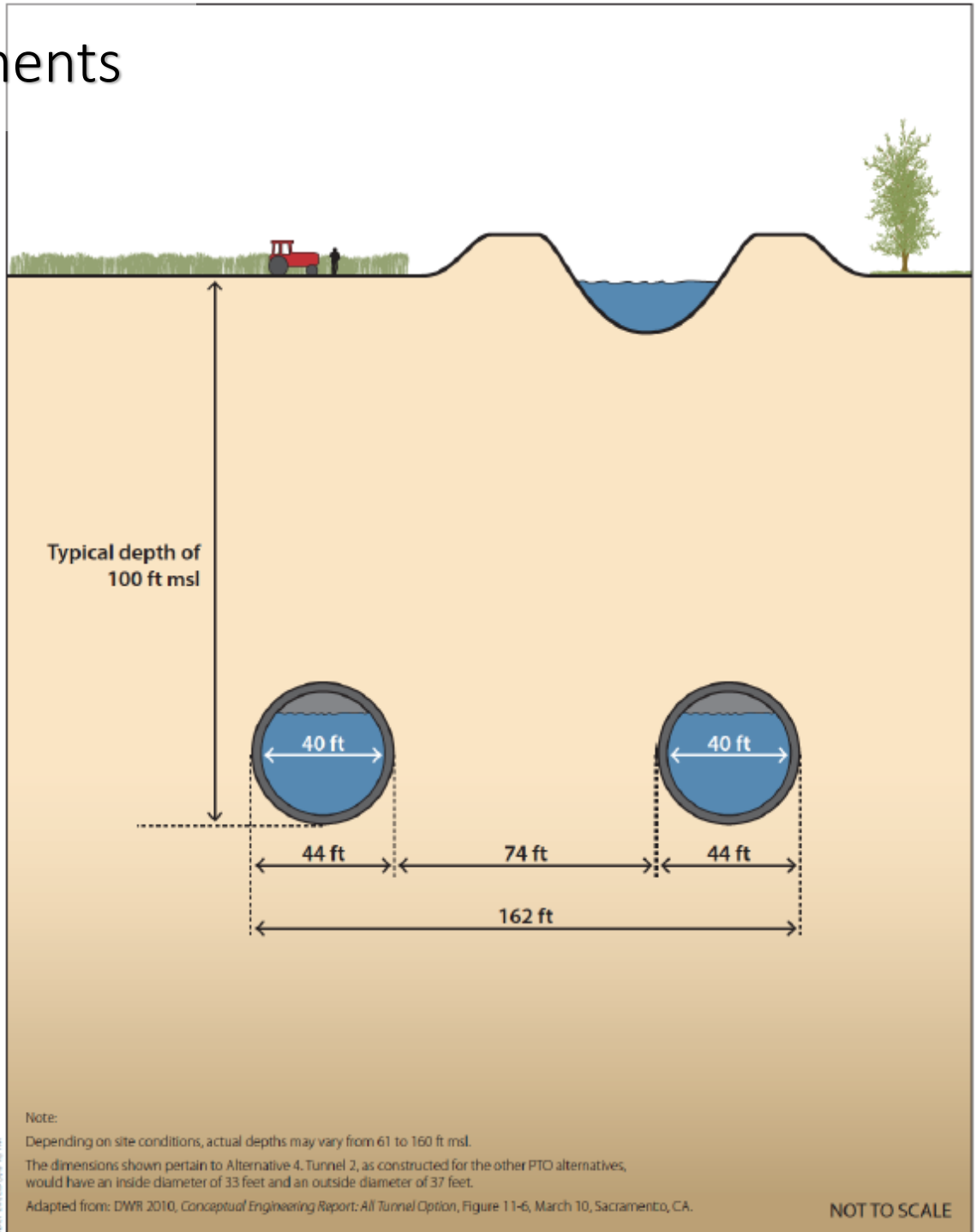


Conservation Measure 1

BDCP Elements



BDCP Elements



BDCP Elements

- Tunnel Size Preferred Alt = 9000cfs
- Alternatives range: 3,000 cfs to 15,000 cfs tunnel
- References
  - 1 cfs = 7.4 gallons/sec
  - Preferred alt: 67,320 gallons/sec
  - Reference: your shower is about 0.04gallons/sec or 0.006 cfs
  - Shower is about 0.00007% of the flow from the tunnels
- This week the Sacramento river (at Freeport) is flowing at about 15,000 cfs (mean is about 25,000 cfs)

Data from: http://waterdata.usgs.gov/ca/nwis/uv/?site_no=11447650&PARAmeter_cd=00065,00060

BDCP Elements

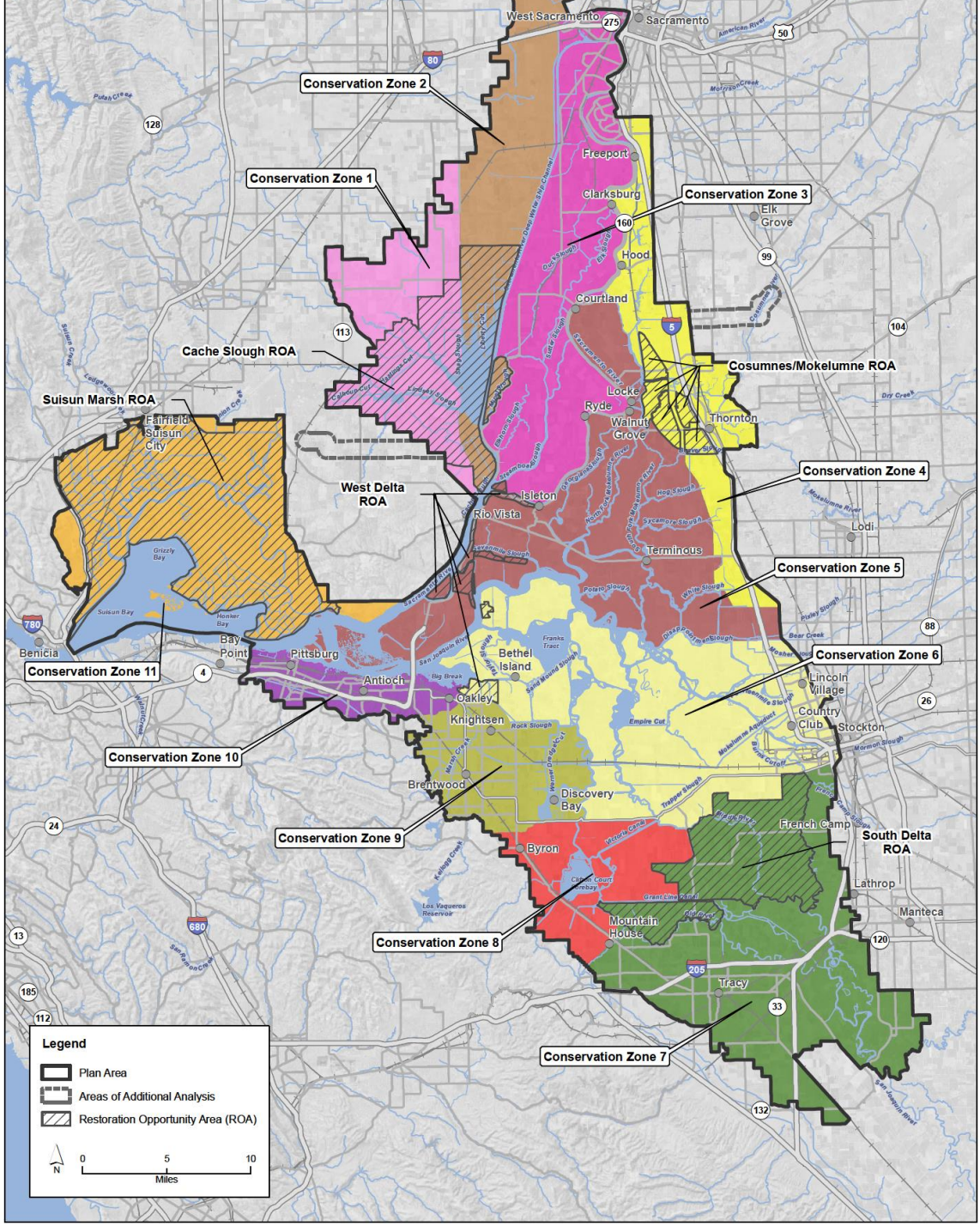
Conservation Measure 2

January 31, 2012: weight 0.92 grams, length 47 mm

March 12, 2012: weight 6.45 grams, length 81 mm

BDCP Elements

Conservation Measure 4- 65,000 acres of tidal restoration



BDCP Elements

Stressors Reductions

- CM12 Methylmercury management
- CM13 Invasive aquatic vegetation control
- CM14 Stockton deepwater ship channel dissolved oxygen levels
- CM15 Reduction in predatory fishes
- CM17 Illegal harvest reduction
- CM18 Conservation hatcheries
- CM19 Urban stormwater treatment

Analysis and Impacts - Water Supply

- In the future, the range of water exports under the preferred alternative: increase 2% to decrease 14%
- 2000-2009 average:
  - 60% goes to agriculture
  - 40% goes to urban

Analysis and Impacts - Fish

Table 11-4-SUM1. Results of Flow-Related Effects on Fish

Species	Entrainment	Spawning	Rearing	Migration
Delta smelt	B/LTS	NA/LTS	ND/LTS	ND/LTS
Longfin smelt	NA/B		ND/LTS (combined)	
Winter-Run Chinook salmon	NA/LTS	ND/LTS	NA/LTS	ND/LTS
Spring-Run Chinook salmon	NA/B	ND/LTS	NA/LTS	ND/LTS
Fall-Run/Late Fall-Run Chinook salmon	NA/LTS	NA/LTS	NA/LTS	ND/LTS
Steelhead	NA/LTS	NA/LTS	NA/LTS	ND/LTS
Sacramento splittail	NA/B	NA/LTS	NA/LTS	NA/LTS
Green sturgeon	NA/LTS	NA/LTS	NA/LTS	ND/LTS
White sturgeon	NA/LTS	NA/LTS	NA/LTS	ND/LTS
Pacific lamprey	NA/LTS	NA/LTS	NA/LTS	NA/LTS
River lamprey	NA/LTS	NA/LTS	NA/LTS	NA/LTS

Level of significance:

NEPA Conclusion	*CEQA Conclusion*
A = Adverse.	SU = Significant and Unavoidable.
NA = Not Adverse.	LTS = Less than Significant.
B = Beneficial.	B = Beneficial.
ND = Not Determined.	S = Significant.

Analysis and Impacts - Water Quality

Chloride			OCT		NOV		DEC		JAN		FEB		MAR		APR		MAY		JUN		JUL		AUG		SEP		Annual Avg. Change	
Alt 4 LLT Scenario H1	Location	Period *	Ex. Cond.	No Act. LLT	Ex. Cond.	No Act. LLT	Ex. Cond.	No Act. LLT	Ex. Cond.	No Act. LLT	Ex. Cond.	No Act. LLT	Ex. Cond.	No Act. LLT	Ex. Cond.	No Act. LLT	Ex. Cond.	No Act. LLT	Ex. Cond.	No Act. LLT	Ex. Cond.	No Act. LLT	Ex. Cond.	No Act. LLT	Ex. Cond.	No Act. LLT	Ex. Cond.	No Act. LLT
Delta Interior	Mokelumne R. (SF) at Staten Island	ALL	3	4	3	3	1	2	1	2	1	2	3	3	3	3	3	3	6	7	6	6	6	6	4	4	3	4
			(29%)	(30%)	(27%)	(25%)	(11%)	(13%)	(6%)	(11%)	(7%)	(12%)	(17%)	(20%)	(18%)	(21%)	(16%)	(20%)	(31%)	(39%)	(31%)	(37%)	(43%)	(42%)	(37%)	(37%)	(22%)	(25%)
		DROUGHT	3	3	3	3	1	2	0	1	0	1	2	3	1	2	2	3	7	8	10	10	6	6	4	4	3	4
			(24%)	(24%)	(26%)	(25%)	(11%)	(13%)	(2%)	(5%)	(-0%)	(4%)	(8%)	(15%)	(5%)	(12%)	(10%)	(16%)	(38%)	(44%)	(56%)	(59%)	(43%)	(39%)	(29%)	(31%)	(19%)	(22%)
	SJR at Buckley Cove	ALL	-2	1	0	1	-2	4	-2	3	-2	2	-1	2	-3	2	-3	2	-6	4	-8	4	-9	4	-4	1	-4	2
			(-2%)	(1%)	(0%)	(1%)	(-3%)	(5%)	(-2%)	(4%)	(-2%)	(3%)	(-2%)	(3%)	(-3%)	(2%)	(-4%)	(2%)	(-7%)	(5%)	(-9%)	(5%)	(-10%)	(5%)	(-5%)	(1%)	(-4%)	(3%)
		DROUGHT	-2	1	-2	1	-5	4	-6	4	-3	3	-3	3	-5	4	-6	4	-10	6	-10	7	-15	7	-6	2	-6	4
			(-2%)	(2%)	(-3%)	(1%)	(-6%)	(5%)	(-6%)	(5%)	(-3%)	(3%)	(-3%)	(4%)	(-6%)	(5%)	(-7%)	(5%)	(-12%)	(11%)	(-12%)	(10%)	(-16%)	(9%)	(-7%)	(2%)	(-7%)	(5%)
	Franks Tract	ALL	-4	63	-157	-23	-58	-13	-19	-22	2	-4	12	9	11	8	9	5	16	11	-41	6	-14	33	40	56	-17	11
			(-1%)	(28%)	(-41%)	(-9%)	(-19%)	(-5%)	(-12%)	(-14%)	(3%)	(-6%)	(31%)	(21%)	(30%)	(20%)	(20%)	(9%)	(33%)	(18%)	(-21%)	(4%)	(-6%)	(18%)	(13%)	(20%)	(-10%)	(7%)
		DROUGHT	-21	18	-146	-30	-46	-7	-34	-15	11	-7	10	4	7	5	13	2	37	10	-90	-22	-38	39	15	-16	-23	-2
			(-6%)	(5%)	(-33%)	(-9%)	(-12%)	(-2%)	(-16%)	(-8%)	(16%)	(-6%)	(34%)	(12%)	(32%)	(19%)	(44%)	(5%)	(71%)	(13%)	(-29%)	(-9%)	(-12%)	(16%)	(4%)	(-5%)	(-11%)	(-1%)
	Old R. at Rock Slough	ALL	21	62	-125	-15	-54	-10	-19	-22	-1	-4	10	6	4	1	2	-1	15	11	-25	7	-11	28	36	50	-12	9
			(9%)	(31%)	(-40%)	(-6%)	(-21%)	(-5%)	(-13%)	(-14%)	(-1%)	(-6%)	(21%)	(12%)	(8%)	(2%)	(4%)	(-1%)	(28%)	(19%)	(-17%)	(6%)	(-6%)	(19%)	(16%)	(21%)	(-6%)	(7%)
		DROUGHT	10	21	-115	-20	-44	2	-30	-12	2	-6	7	1	4	0	6	2	26	9	-66	-17	-34	33	26	12	-17	2
			(4%)	(7%)	(-33%)	(-6%)	(-14%)	(1%)	(-16%)	(-7%)	(3%)	(-7%)	(18%)	(2%)	(10%)	(1%)	(25%)	(4%)	(65%)	(14%)	(-27%)	(-9%)	(-12%)	(16%)	(10%)	(4%)	(-9%)	(1%)
Western Delta	Sac. R. at Emmaton	ALL	-173	31	-44	90	37	-13	-19	-53	12	-14	16	2	29	12	57	37	92	54	152	148	235	185	206	178	51	53
			(-20%)	(5%)	(-5%)	(12%)	(9%)	(-3%)	(-12%)	(-28%)	(17%)	(-15%)	(55%)	(5%)	(75%)	(22%)	(55%)	(25%)	(41%)	(21%)	(46%)	(45%)	(50%)	(30%)	(25%)	(21%)	(14%)	(15%)
		DROUGHT	-327	-88	-85	27	-9	-103	40	-42	61	-2	19	5	39	19	152	79	182	82	369	313	252	135	-31	-278	55	12
			(-28%)	(-10%)	(-7%)	(2%)	(-1%)	(-13%)	(10%)	(-14%)	(56%)	(-1%)	(42%)	(6%)	(92%)	(27%)	(95%)	(32%)	(92%)	(20%)	(78%)	(80%)	(42%)	(19%)	(-3%)	(-20%)	(11%)	(2%)
	SJR at Antioch	ALL	-614	44	-554	-3	-176	-111	-173	-212	-26	-79	36	-3	58	16	79	24	110	42	45	202	271	278	222	436	-60	53
			(-29%)	(3%)	(-23%)	(-0%)	(-12%)	(-8%)	(-20%)	(-33%)	(-10%)	(-25%)	(31%)	(-2%)	(41%)	(9%)	(22%)	(6%)	(19%)	(6%)	(4%)	(19%)	(18%)	(19%)	(10%)	(23%)	(-6%)	(5%)
		DROUGHT	-830	-132	-647	-110	-366	-276	-117	-240	55	-85	32	-7	70	19	158	53	206	73	163	274	285	289	-110	-317	-93	-38
			(-31%)	(-7%)	(-21%)	(-4%)	(-19%)	(-14%)	(-14%)	(-25%)	(13%)	(-15%)	(20%)	(-3%)	(35%)	(8%)	(28%)	(8%)	(25%)	(7%)	(9%)	(17%)	(17%)	(17%)	(-4%)	(-11%)	(-7%)	(-3%)
	Sac. R. at Mallard Island	ALL	-662	148	-412	211	-168	-125	-246	-256	29	-53	139	58	217	131	261	143	246	130	248	460	440	436	369	816	37	177
			(-14%)	(4%)	(-8%)	(5%)	(-8%)	(-4%)	(-15%)	(-15%)	(3%)	(-5%)	(30%)	(11%)	(29%)	(16%)	(19%)	(10%)	(13%)	(6%)	(8%)	(17%)	(13%)	(13%)	(9%)	(21%)	(1%)	(7%)
		DROUGHT	-1023	-94	-692	65	-460	-346	-89	-215	164	-51	160	97	229	153	215	165	236	160	292	462	381	404	-132	-228	-61	49
			(-19%)	(-2%)	(-11%)	(1%)	(-11%)	(-8%)	(-4%)	(-8%)	(10%)	(-3%)	(23%)	(13%)	(21%)	(13%)	(10%)	(8%)	(10%)	(6%)	(8%)	(14%)	(10%)	(11%)	(-3%)	(-5%)	(-2%)	(2%)
Major Diversions (Pumping Stations)	NBA at Barker Slough PP	ALL	14	15	18	19	19	19	10	10	2	0	-1	-2	-3	-2	-4	-3	-6	-4	-3	-1	0	2	10	10	5	5
			(51%)	(57%)	(124%)	(135%)	(144%)	(143%)	(59%)	(58%)	(13%)	(2%)	(-9%)	(-13%)	(-17%)	(-12%)	(-21%)	(-21%)	(-29%)	(-24%)	(-16%)	(-6%)	(2%)	(8%)	(53%)	(58%)	(28%)	(31%)
		DROUGHT	18	20	29	31	36	36	25	25	13	12	4	4	2	1	0	-3	-1	0	5	7	11	11	19	19	13	13
			(67%)	######	(179%)	(209%)	(292%)	(267%)	(201%)	(190%)	(90%)	(82%)	(30%)	(23%)	(14%)	(9%)	(0%)	(-15%)	(-7%)	(-2%)	(21%)	(31%)	(46%)	(46%)	(85%)	(84%)	(78%)	(78%)
	Contra Costa PP #1	ALL	52	66	-6	57	-61	-7	-46	-26	6	-11	11	7	9	6	0	-2	12	7	-12	3	-32	15	16	33	-6	14
			(21%)	(41%)	(-2%)	(30%)	(-34%)	(-4%)	(-26%)	(-16%)	(5%)	(-12%)	(20%)	(12%)	(16%)	(11%)	(0%)	(-3%)	(21%)	(11%)	(-10%)	(3%)	(-16%)	(10%)	(8%)	(16%)	(-4%)	(11%)
		DROUGHT	44	58	-35	-5	-94	-24	-56	-74	-2	-13	6	-1	1	-3	4	-1	24	7	-37	-24	-58	2	19	49	-18	-3
			(15%)	(20%)	(-12%)	(-2%)	(-31%)	(-10%)	(-25%)	(-31%)	(-2%)	(-14%)	(13%)	(-2%)	(3%)	(-6%)	(10%)	(-2%)	(58%)	(11%)	(-20%)	(-14%)	(-28%)	(1%)	(7%)	(22%)	(-10%)	(-2%)
	Banks PP	ALL	-23	-6	-90	-31	-80	-46	-83	-59	-37	-41	-42	-44	-40	-42	-20	-21	-24	-26	-41	-20	-57	-20	-26	-9	-45	-30
			(-14%)	(-4%)	(-44%)	(-21%)	(-42%)	(-30%)	(-45%)	(-44%)	(-45%)	(-47%)	(-62%)	(-63%)	(-57%)	(-58%)	(-27%)	(-28%)	(-36%)	(-38%)	(-39%)	(-24%)	(-38%)	(-18%)	(-15%)	(-6%)	(-37%)	(-28%)
		DROUGHT	-5	1	-66	-21	-72	-38	-79	-63	-32	-33	-34	-36	-26	-28	-10	-13	7	0	-68	-44	-67	-25	-3	13	-40	-24
			(-2%)	(0%)	(-29%)	(-12%)	(-32%)	(-20%)	(-47%)	(-41%)	(-35%)	(-35%)	(-51%)	(-53%)	(-40%)	(-42%)	(-17%)	(-20%)	(13%)	(-0%)	(-47%)	(-36%)	(-39%)	(-15%)	(-1%)	(7%)	(-28%)	(-19%)
	Jones PP	ALL	-42	-24	-67	-33	-56	-31	-38	-33	-29	-30	-33	-35	-34	-35	-35	-36	-33	-36	-39	-20	-25	6	-52	-35	-42	-28
			(-27%)	(-16%)	(-47%)	(-25%)	(-36%)	(-24%)	(-33%)	(-30%)	(-35%)	(-37%)	(-44%)	(-46%)	(-42%)	(-42%)	(-44%)	(-44%)	(-48%)	(-51%)	(-35%)	(-22%)	(-17%)	(6%)	(-34%)	(-26%)	(-36%)	(-28%)
		DROUGHT	-37	-30	-73	-24	-60	-40	-33	-19	-10	-10	-13	-14	-21	-22	-33	-34	-11	-21	-74	-45	-47	7	-1	9	-34	-20
			(-21%)	(-16%)	(-36%)	(-16%)	(-34%)	(-26%)	(-25%)	(-16%)	(-12%)	(-12%)	(-17%)	(-18%)	(-27%)	(-27%)	(-43%)	(-44%)	(-21%)	(-34%)	(-48%)	(-36%)	(-23%)	(4%)	(-1%)	(5%)	(-26%)	(-17%)

Next steps for EPA

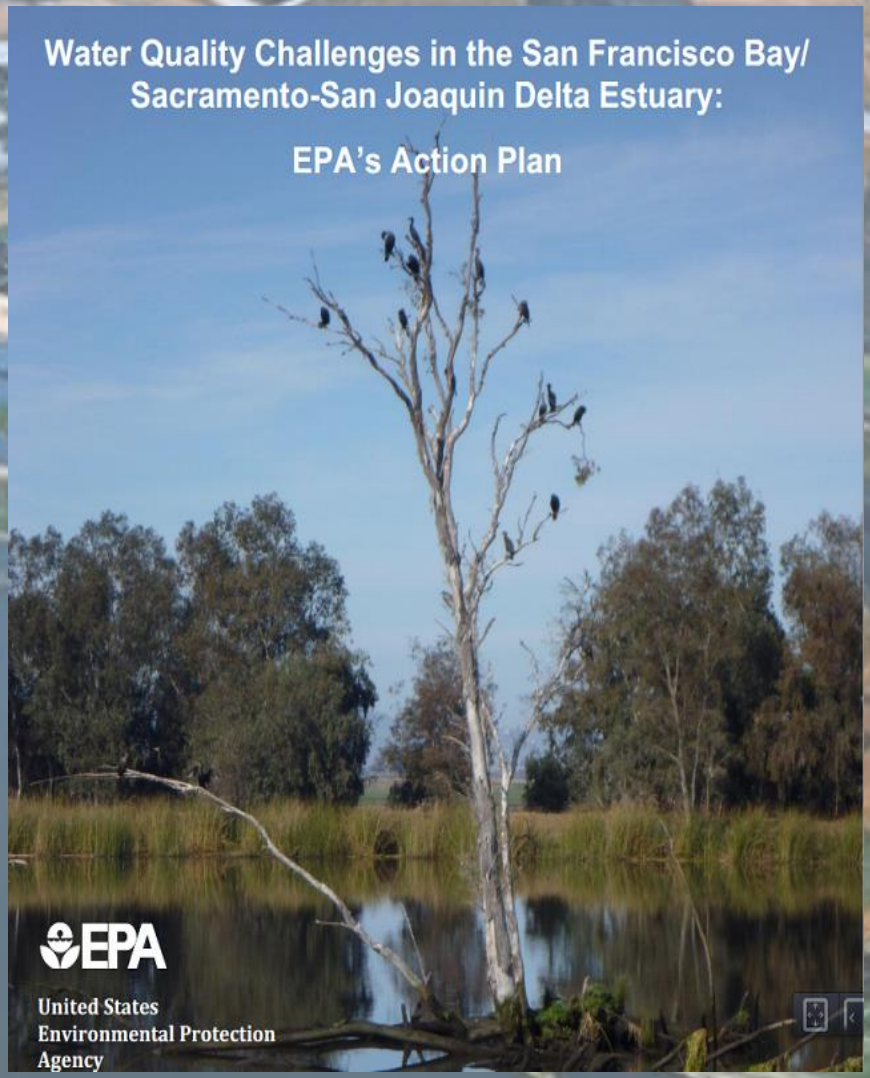
1. NEPA/309 Review Role- EPA will review all EIS's prepared by federal agencies and send comments

2. CWA Regulatory Role - Oversight
   - Water Quality Standards
   - Wetlands Regulatory Permit

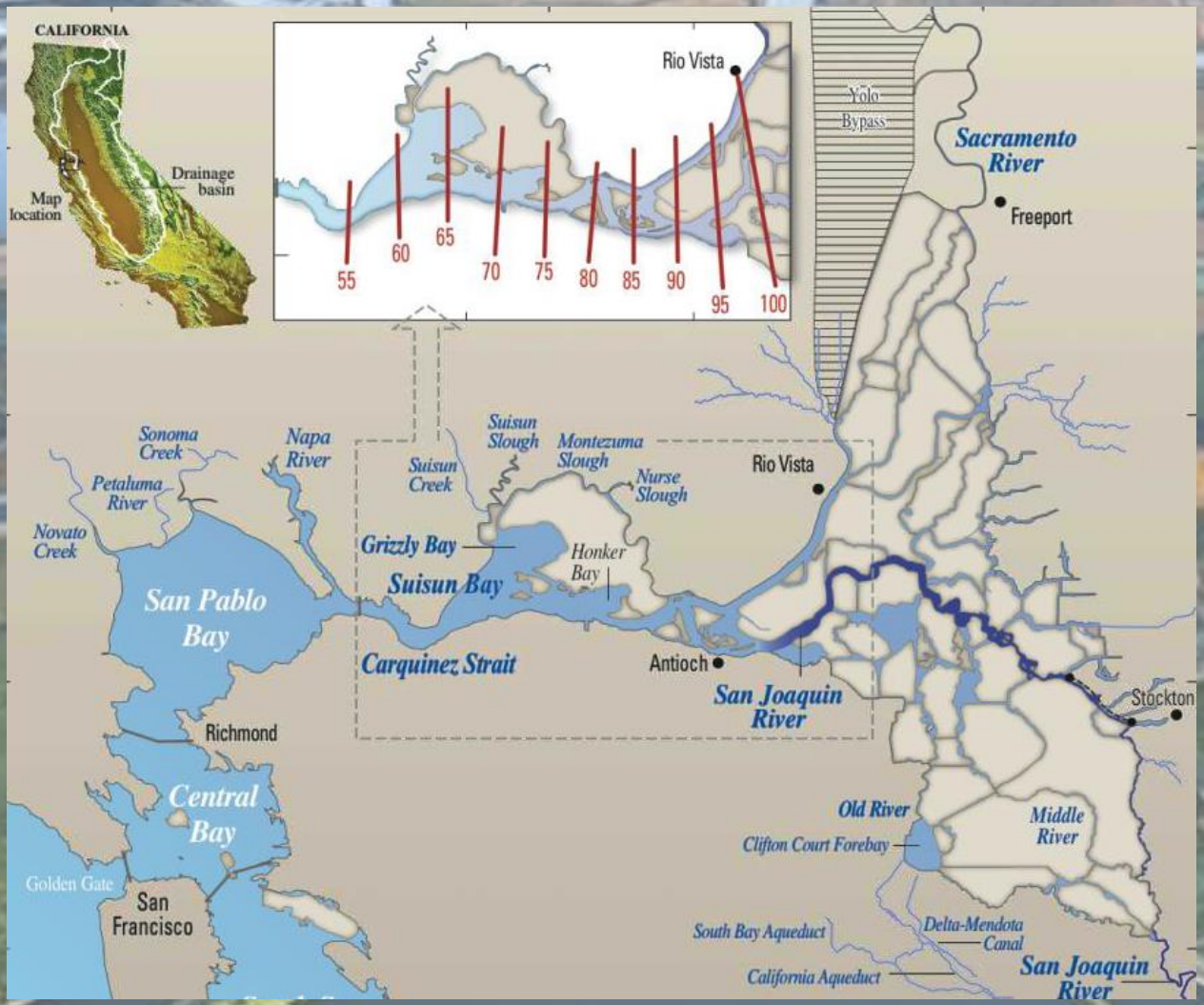
3. SF Bay Delta Action Plan

Bay Delta Action Plan- 2012

- **Strengthen water quality standards to protect estuarine habitat**
- **Advance regional water quality monitoring and assessment**
- **Accelerate water quality restoration through Total Maximum Daily Loads**
- **Strengthen selenium water quality criteria**
- **Prevent pesticide pollution**
- **Restore aquatic habitats while managing methylmercury**
- **Support the Bay Delta Conservation Plan**



Strengthen Water Quality Standards



Resources for More

- www.epa.gov/sfbaydelta
  - EPA's Action Plan
  - EPA NEPA Letters
- Baydeltaconservationplan.com
- Mavensnotebook.com